

Claims

- [c1] A staircase system comprising:
at least one rail element;
a plurality of stair elements;
a plurality of baluster elements coupled to said at least one rail element and to said plurality of stair elements;
and
a center support system coupled to and supporting said at least one rail element and said plurality of stair elements, said center support system having a stowed state and a deployed state.
- [c2] A system as in claim 1 wherein said at least one rail element is in the form of a potential energy device.
- [c3] A system as in claim 1 wherein said at least one rail element assists in contracting said center support system into said stowed state.
- [c4] A system as in claim 1 wherein said at least one rail element assists said center support system into said deployed state.
- [c5] A system as in claim 1 wherein said at least one rail element is formed of at least one material selected from

aluminum, steel, and a composite material.

- [c6] A system as in claim 1 wherein said plurality of stair elements comprise:
a plurality of outer edges; and
a plurality of radial edges.
- [c7] A system as in claim 6 wherein said plurality of outer edges substantially form a circle when said center support system is in said stowed state.
- [c8] A system as in claim 6 wherein said plurality of radial edges comprise straight radial edges.
- [c9] A system as in claim 6 wherein said plurality of radial edges comprise curved radial edges.
- [c10] A system as in claim 1 wherein said plurality of stair elements comprise at least one staging stair element.
- [c11] A system as in claim 10 wherein said staging stair element is at a fixed height for human standing clearance.
- [c12] A system as in claim 10 wherein said staging stair element is in the form of a step.
- [c13] A system as in claim 1 wherein said plurality of baluster elements are in the form of potential energy devices.
- [c14] A system as in claim 1 wherein said plurality of baluster

elements assist in contracting said center support system into said stowed state.

[c15] A system as in claim 1 wherein said plurality of baluster elements assist said center support system into said deployed state.

[c16] A system as in claim 1 wherein said plurality of baluster elements are formed of at least one material selected from aluminum, steel, and a composite material.

[c17] A system as in claim 1 wherein said plurality of baluster elements are in a curved state when said center support system is in said stowed state.

[c18] A system as in claim 1 wherein said plurality of baluster elements are in a substantially straight state when said center support system is in said deployed state.

[c19] A system as in claim 1 wherein said plurality of baluster elements are in a nesting arrangement when said center support system is in said stowed state.

[c20] A system as in claim 1 wherein said at least one rail element, said plurality of stair elements, and said plurality of baluster elements form a disk-shaped structure when said center support system is in said stowed state.

[c21] A system as in claim 20 wherein said disk-shaped struc-

ture has a cross-sectional height of less than approximately two inches.

[c22] A system as in claim 1 wherein said center support system telescopes between said stowed state and said deployed state.

[c23] A system as in claim 1 wherein said center support system comprises a plurality of telescoping elements.

[c24] A system as in claim 23 wherein said plurality of telescoping elements comprise a plurality of slot receptacles for position guidance of a plurality of stair element slot coupling members when transitioning between said stowed state and said deployed state.

[c25] A system as in claim 1 wherein said center support system comprises a plurality of ribbon coil structures coupled together by a plurality of interlocking elements.

[c26] A system as in claim 25 wherein said plurality of ribbon coil structures and said plurality of interlocking elements form a helically wound tubular structure when said center support system is in said deployed state.

[c27] A system as in claim 1 wherein said center support system comprises a plurality of truss elements.

[c28] A system as in claim 27 wherein said plurality of truss

elements are in a triangular arrangement when said center support system is in said deployed state.

- [c29] A system as in claim 1 wherein said at least one rail element, said plurality of stair elements, said plurality of baluster elements, and said center support system are stowable in a ceiling.
- [c30] A system as in claim 1 wherein said at least one rail element, said plurality of stair elements, said plurality of baluster elements, and said center support system are stowable in a floor.
- [c31] A system as in claim 1 further comprising a deployment mechanism coupled to said center support system.
- [c32] A system as in claim 31 wherein said deployment mechanism comprises:
a deployment handle coupled to said center support system; and
at least one release mechanism releasing said center support system.
- [c33] A system as in claim 1 further comprising a locking system maintaining position of said plurality of stair elements and said center support system.
- [c34] A method of accessing an overhead area comprising:

releasing a staircase system;
deploying said staircase system comprising extending a telescoping center support system of said staircase system;
ascending a plurality of circular stair elements of said staircase system; and
interacting with the overhead area.

[c35] A method as in claim 34 wherein deploying said staircase system comprises helically orienting said plurality of circular stair elements about said telescoping center support system.

[c36] An overhead space access stowable spiral staircase system comprising:
at least one circular rail element;
a plurality of stair elements having a plurality of circular outer edges;
a plurality of baluster elements coupled to said at least one rail element and to said plurality of stair elements;
and
a center support system coupled to and supporting said at least one rail element and said plurality of stair elements, said center support system having a stowed state and a deployed state.

[c37] A system as in claim 36 wherein said at least one circular

rail element, said plurality of stair elements, said plurality of baluster elements, form a disk-shaped structure when said center support system is in said stowed state.

[c38] An aircraft comprising:
an aircraft structure having at least one overhead area;
and
a staircase system comprising;
at least one rail element;
a plurality of stair elements;
a plurality of baluster elements coupled to said at least one rail element and to said plurality of stair elements;
and
a center support system coupled to and supporting said at least one rail element and said plurality of stair elements, said center support system having a stowed state and a deployed state;
said center support system when in said deployed state providing access to said overhead area.

[c39] An aircraft as in claim 38 wherein said staircase system is stowable into a ceiling.

[c40] An aircraft as in claim 38 wherein said staircase system is stowable into a floor.